Claims

1. An exhaust gas system (10) for an internal combustion engine (12), having a depth filter (16) for removing soot (30) from the exhaust gas, in which the depth filter (16) includes a catalyst material (18) which promotes the oxidation of soot, characterized in that an internal pore structure (28) of the depth filter (16) is provided with a catalyst material (18) which is liquid at an operating temperature of the depth filter (16), and in particular beyond a temperature of approximately no higher than 400°C, and highly preferably no higher than approximately 350°C.

2. The exhaust gas system (16) according to claim 1, characterized in that the catalyst material (18) of the depth filter (16) includes "molten salt" material, in particular $Cs_2SO_4V_2O_5$ or Cs vanadates or Ag compounds, in particular Ag vanadates.

3. The exhaust gas system according to claim 1, characterized in that the catalyst material additionally includes: Rh and/or Pd, on such substrates as aluminum, zirconium, cerium oxides and/or mixed oxides, such as Ce/ZrO_2, or without a substrate; elements of Group 11 (Ag, Au, and/or Cu) on such substrates as aluminum, zirconium, cerium oxides and/or mixed oxides, such as Ce/ZrO_2, or without a substrate; oxygen-storing and -releasing materials, such as compounds of Mn, Fe, Ce, and Pr; materials that form nitrate under exhaust gas conditions (NO_x reservoir), in particular elements of the alkaline earth group, as well as of Group 3 and the rare earths; and/or materials which are distinguished by high acidity, such as zeolites and the following oxides or oxide mixtures: TiO_2, ZrO_2, SiO_2, Al_2O_3, and boric oxides.

4. The exhaust gas system (16) according to one of the foregoing claims, characterized in that the depth filter (16) includes an open-pore silicon carbide foam filter (28) with pore diameters in the range of approximately 40 μm to approximately 1000 μm and with a porosity of at least approximately 60%.

5. The exhaust gas system (16) according to one of the foregoing claims, characterized in that it includes a downstream surface filter (20); and that upstream of the surface filter (20) is a catalytic converter (22), by which nitrogen dioxide is formed from the exhaust gas.

6. The exhaust gas system (16) according to one of the foregoing claims, characterized in that it includes a downstream surface filter (20); and that a structure (32) of the surface filter (20) is provided with a catalyst material (24).

7. The exhaust gas system (16) according to claim 6, characterized in that the catalyst material (24) includes a material selected from the list recited in claim 2.

8. The exhaust gas system (16) according to one of claims 6 or 7, characterized in that the catalyst material (24) includes a conventional NO_x reservoir catalyst material, a conventional NH_3-SCR catalyst material, and/or some other material for reducing nitrogen oxide emissions.

9. The exhaust gas system (16) according to one of claims 6 through 8, characterized in that the surface filter (20) includes a cordierite filter (32) having a cell number of from

approximately 50 to approximately 300 cpsi, a porosity of approximately 50%, and a pore diameter of no larger than approximately 100 μm, preferably no larger than approximately 40 μm, even more preferably no larger than approximately 10 μm.

10. The exhaust gas system (16) according to one of claims 6 through 9, characterized in that the surface filter (20) includes a Pt catalyst material (22), in particular Pt-CE/ZrO_2, on its inflow side and a conventional NO_x reservoir catalyst material (24) on its outflow side.

11. A method for operating an internal combustion engine having an exhaust gas system (16) according to one of claims 5 through 10, characterized in that soot (30) deposited in the surface filter (20) is oxidized continuously.